The Washington State Experience

Residential Energy Code Compliance

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WASHINGTON STATE UNIVERSITY
EXTENSION ENERGY PROGRAM

WSU Energy Program

Provides energy services, products, education and information for:

- Businesses
- Utilities – public and private
- Governments – state and local
- Tribes
- Federal agencies
- Manufacturing plants
- Educational facilities
- National laboratories

WSU Energy Program
Building Science Team

Staff provides building science expertise for:

- Residential energy code technical assistance
- Voluntary programs, Northwest ENERGYSTAR Homes
- Research and development, Building America
- Community-based upgrade programs
- Industry training and certifications – HERS, BPI, ENERGY STAR, PTCS

WSU Energy Program
Energy Code Support

Technical support provided in Washington:

- Training offered throughout WA State
- Phone and email inquiry hotline support
- Energy code compliance tools
- Website
- Building department site visits
- Code development Technical Advisory Groups (TAGs)

State-Level Legislation and Goals

Washington State law requires that the Energy Code in 2031 be 70% more efficient than the 2006 version.

- RCW19.27A.160

Former Governor Gregoire's Climate Action Team requested that the 2009 WA Energy Code be 30% more efficient than the 2006 version.

- 18% efficiency increase from 2006 to 2009
- 27% efficiency increase from 2006 to 2012

Compliance Study

A recent study of Washington's residential energy code compliance rates was completed by The Cadmus Group in March 2013.

Compliance was determined by three methods:

- Checklist – PNNL method, 96% compliance level
- Significant Item – 9 significant items with the most impact on energy use and compliance, 97% compliance level
- Modeling – SEEM-predicted energy use determined that houses used 4% less energy than code-compliant homes

Compliance Study

(continued)

- 66 homes
- 90% confidence that results are within 10% of true population values
- Cost of the study - $150,000, funded by Northwest Energy Efficiency Alliance (NEEA)

Success as a Result of Investment

- NEEA, with support from Bonneville Power Administration, Energy Trust of Oregon and over 100 Northwest utilities, provides $1.6 million per year for four states

- Some of this funding supports national code and standards development, which affects Washington indirectly

Success as a Result of Investment

- Funding for WA Residential Energy Code Program is currently $300,000 per year
- NEEA has consistently funded energy code support for many years
- Previous funding partners:
  - BPA
  - USDOE
  - Utilities
  - Private-sector funders

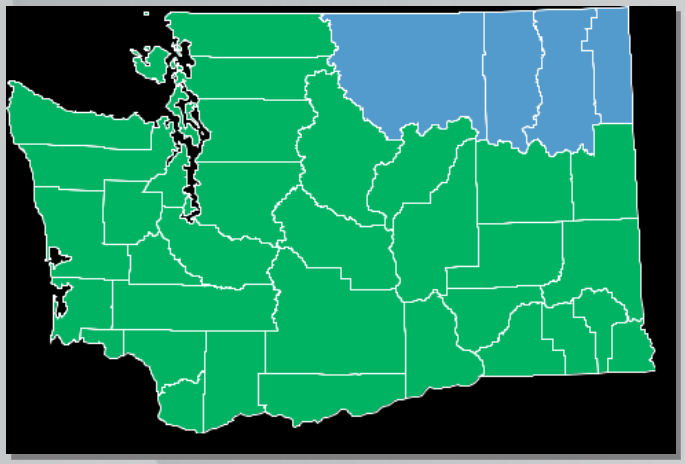
Reasons for Success

- Stable funding from NEEA and utilities
- Consistency in outreach program and staff
- Investment in relationship building
- Partnerships with industry organizations and associations:
  - Building Industry Association of Washington
  - Washington Association of Building Officials
  - American Institute of Architects
  - Local Home Builders' Associations

Building Industry Training to Meet Compliance Targets

Classroom and in-field training

- Provide an on-going training program
- Diversify course offerings to keep industry engaged:
  - Energy Code Overviews
  - Ventilation and Indoor Air Quality
  - Air Sealing
  - Duct and Air Leakage Testing
  - Exterior Foam Sheathed Walls
- Respond to geographic need



The Last Five Years Have Been Busy

Year	Classes	Attendees
2009	10	157
2010	96	2,871
2011	73	1,652
2012	36	484
2013	12	389
Total	**227**	**5,553**

Building Department Site Visits

- Discuss energy code issues and questions at individual jurisdictions
- Make a site visit to a house under construction
- Offer targeted training to Building Department staff
- Build relationships
- Have been very well received

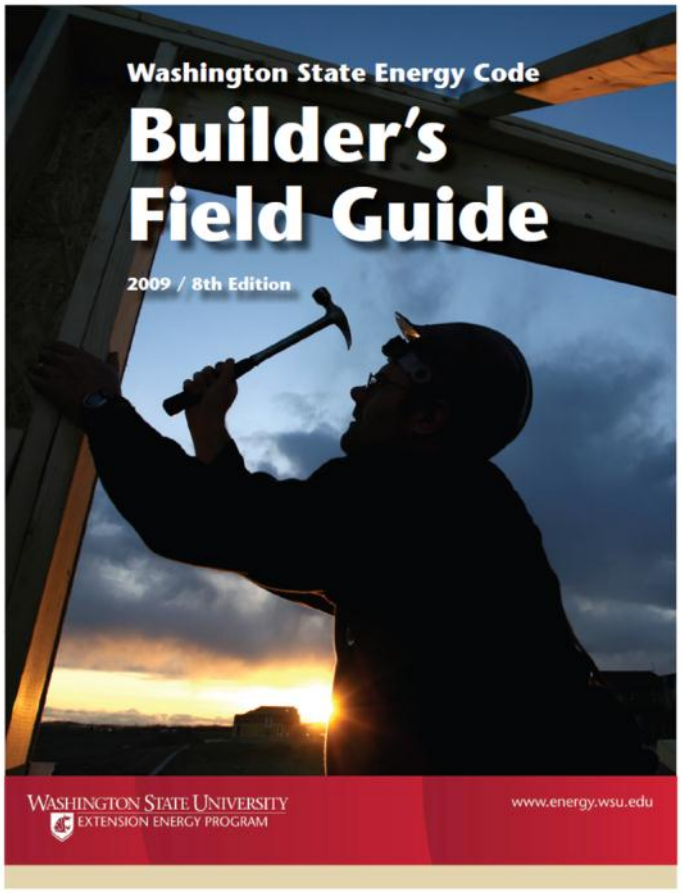
Live Technical Support

- Phone and email support for energy code questions and related topics
- Building department staff are primary client
  - Assistance with project documentation review
  - Discuss enforcement scenarios
- Other frequent callers
  - Builders
  - Architects and designers
  - HVAC contractors
  - Homeowners
- Staffed by a technical expert every day
- Answers provided same day they are submitted

Web Resources Available

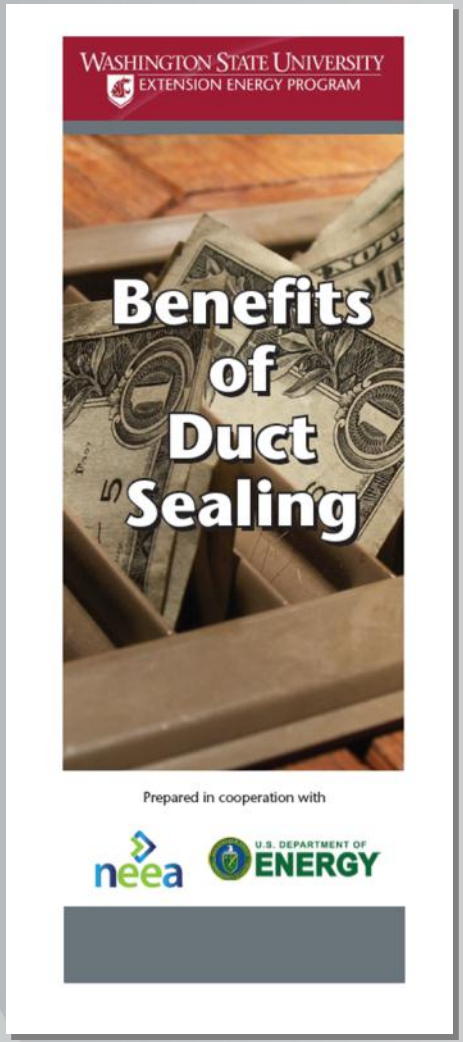
WSU Energy Program website:

- Energy Code text available for download
- Builder's Field Guide
- Listserv membership
- Presentations
- WSU Energy Code publications archive
- Related links to supporting organizations:
  - State Building Code Council
  - Northwest Energy Efficiency Council



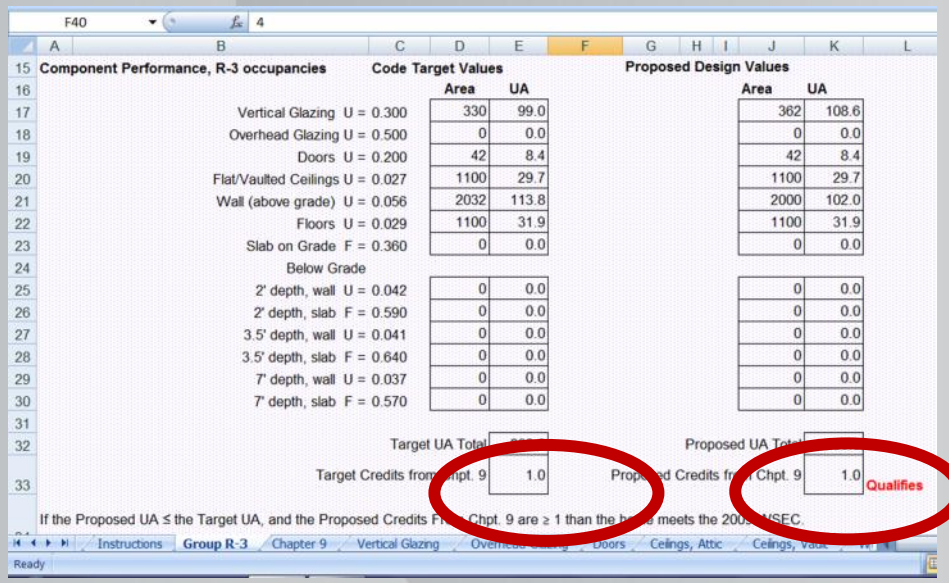
Additional Support Documents

- Affidavits
- Certificates
- Calculators
- Videos
- Brochures
- Frequently Asked Questions



User-Friendly Compliance Forms

- Prescriptive and Component Performance Worksheets
- Staff available to support the tools
- Review of systems analysis software options and outputs



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	A	B	C	D	E	F	G	H	I	J	K	L
15		Component Performance, R-3 occupancies	Code Target Values				Proposed Design Values					
16				Area	UA					Area	UA	
17		Vertical Glazing U = 0.300		330	99.0					362	108.6	
18		Overhead Glazing U = 0.500		0	0.0					0	0.0	
19		Doors U = 0.200		42	8.4					42	8.4	
20		Flat/Vaulted Ceilings U = 0.027		1100	29.7					1100	29.7	
21		Wall (above grade) U = 0.056		2032	113.8					2000	102.0	
22		Floors U = 0.029		1100	31.9					1100	31.9	
23		Slab on Grade F = 0.360		0	0.0					0	0.0	
24		Below Grade										
25		2' depth, wall U = 0.042		0	0.0					0	0.0	
26		2' depth, slab F = 0.590		0	0.0					0	0.0	
27		3.5' depth, wall U = 0.041		0	0.0					0	0.0	
28		3.5' depth, slab F = 0.640		0	0.0					0	0.0	
29		7' depth, wall U = 0.037		0	0.0					0	0.0	
30		7' depth, slab F = 0.570		0	0.0					0	0.0	
31												
32			Target UA Total				Proposed UA Total					
33			Target Credits from Chpt. 9		1.0		Proposed Credits from Chpt. 9				1.0	Qualifies

If the Proposed UA ≤ the Target UA, and the Proposed Credits From Chpt. 9 are ≥ 1 than the home meets the 2003 IECC.

Instructions | Group R-3 | Chapter 9 | Vertical Glazing | Overhead Glazing | Doors | Ceilings, Attic | Ceilings, Vault

Ready

Where Are We Headed From Here?

- Build upon previous successes
- Continue to support building industry in understanding and complying with the energy code
- Incorporate advances in research and technology into standard building practice
- Keep building professionals engaged and laughing

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